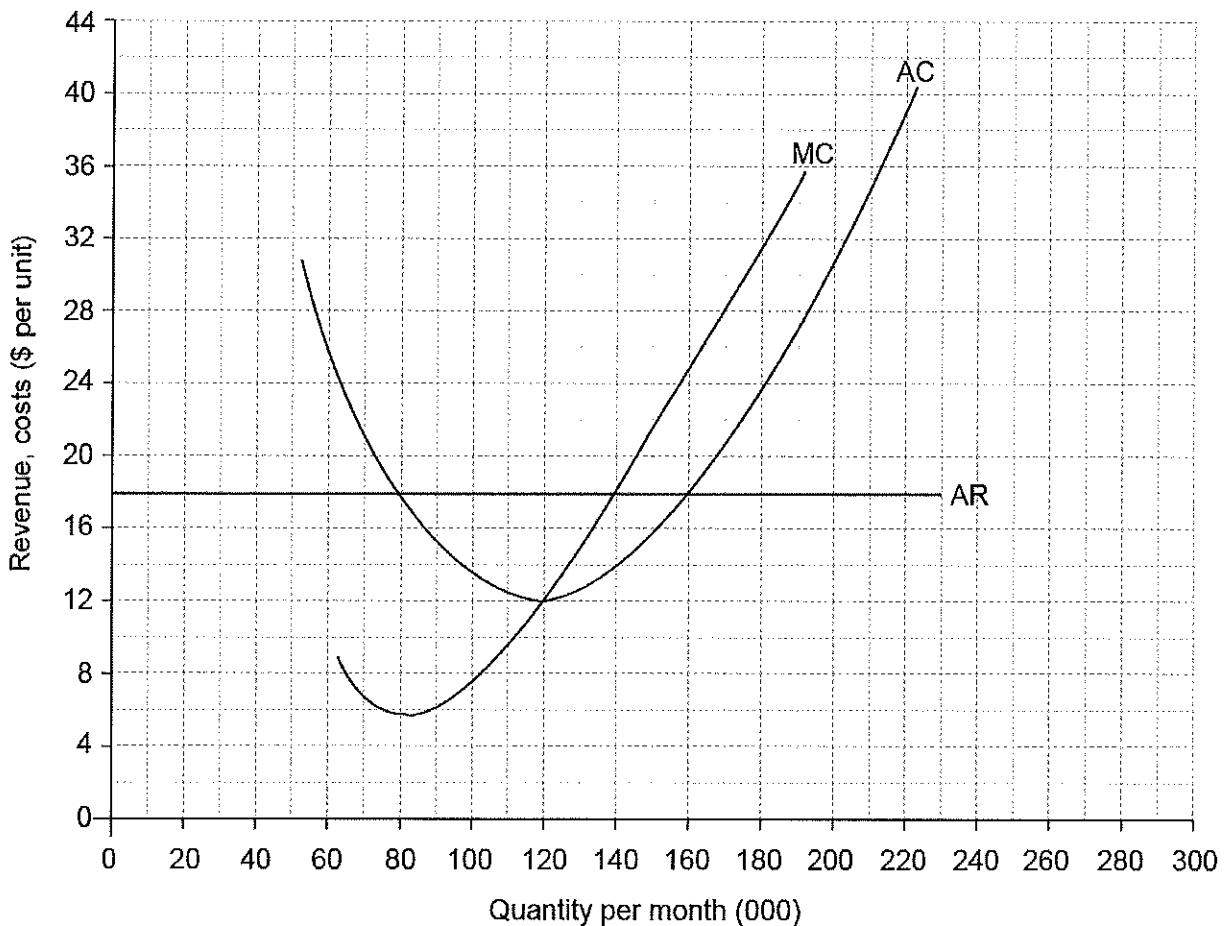


Notes for examiners:

1. Whenever relevant, carry over marks must be awarded. If a candidate makes an error in calculation, but then uses the incorrect figure appropriately and accurately in later question parts, then the candidate may be fully rewarded. This is the “own-figure rule” and you should put OFR on the script where you are rewarding this. To do this you will need to use the on-page comment annotation tool (T).
2. Alternative approaches may be taken in responses to the [4] questions that use A02 command terms. If this is the case and the alternative approaches are valid, then full credit should be given.

1. (a) (i) On the diagram, draw and label the average revenue curve for Firm A. [2]



For an accurate average revenue curve.
For an accurate, labelled average revenue curve.

[1]
[1]

- (ii) Calculate Firm A's total revenue if it produces 180 000 units per month. [2]

Total revenue = $180\,000 \times 18$ [1]

Any valid working is sufficient for [1].

= \$3 240 000 [1]

An answer of \$3 240 000 or 3 240 000 without any valid working is sufficient for [1] only.

Since both AR and quantity are given, OFR does not apply.

- (iii) Identify Firm A's short-run profit maximizing level of output. [1]

Profit-maximizing level of output = 140 000 (the term "units" is not necessary)

OR

120 000 units (the term "units" is not necessary) to allow for maximum profit if measured using the diagram provided

OFR applies if AR (=MR) curve has been drawn in the wrong position. [1]

- (iv) Calculate Firm A's short-run abnormal profit/loss at the level of output identified in part (iii). [2]

At output 140 000

Total revenue = $AR \times Q = 18 \times 140\,000 = 2\,520\,000$

Total cost = $AC \times Q = 14 \times 140\,000 = 1\,960\,000$ [1]

Any valid working is sufficient for [1].

Profit = $2\,520\,000 - 1\,960\,000 = \$560\,000$ [1]

OFR from part (iii) applies; no OFR applies within part (iv).

- (b) With reference to the diagram, identify the long-run equilibrium price and level of output for Firm A. [2]

$P = \$12$ [1]

$Q = 120\,000$ (the term "units" is not necessary) [1]

- (c) Explain, using the diagram, how Firm A will move from short-run equilibrium to long-run equilibrium. [4]

| | | |
|-------|--|-------|
| Level | | Marks |
| 0 | The work does not reach a standard described by the descriptors below. | 0 |

| | | |
|---|----------------------------------|-----|
| 1 | The written response is limited. | 1–2 |
|---|----------------------------------|-----|

For an explanation that the existence of abnormal profits (of \$560 000) in the short run will attract new firms into the industry.

| | | |
|---|-----------------------------------|-----|
| 2 | The written response is accurate. | 3–4 |
|---|-----------------------------------|-----|

For an explanation that the existence of abnormal profits (of \$560 000) in the short run will attract new firms into the industry **and** that this will increase market supply and consequently cause price to decrease until abnormal profits are competed away (at a price of \$12).

A response which makes no direct reference to the diagram may be awarded a maximum of [3].

- (d) Define the term *satisficing*. [2]
- | Level | | Marks |
|-------|--|-------|
| 0 | The work does not reach a standard described by the descriptors below. | 0 |
| 1 | Vague definition. The idea that a firm tries to make enough profit. | 1 |
| 2 | Accurate definition. The idea that a firm tries to make enough profit <ul style="list-style-type: none"> • in order to satisfy different stakeholders OR • in order to pursue other objectives OR • because decision makers do not have the necessary information in order to maximize profits. | 2 |
- (e) Define the term *non-collusive*. [2]
- | Level | | Marks |
|-------|--|-------|
| 0 | The work does not reach a standard described by the descriptors below. | 0 |
| 1 | Vague definition. The idea that firms act independently. | 1 |
| 2 | Accurate definition. The idea that firms do not come together to set agreements on price and/or output. | 2 |

(f) Calculate the price elasticity of demand if

(i) price increases to \$12; [2]

$$PED = \frac{\% \Delta Q}{\% \Delta P} = \frac{59.09}{20} \quad [1]$$

Any valid working is sufficient for [1].

$$= 2.95 \text{ (or } -2.95) \quad [1]$$

An answer of 2.95 (or -2.95) without any valid working is sufficient for [1] only.

Correct use of negative sign for ΔQ and PED may be present but is not necessary.

N.B. Candidates who use an accurate midpoint formula may be fully rewarded.

$$\frac{13}{15.5} \times \frac{11}{2}$$

$$= 4.61 \text{ or } -4.61$$

An answer of 4.61 (or -4.61) without any valid working is sufficient for [1] only.

(ii) price decreases to \$4. [2]

$$PED = \frac{\% \Delta Q}{\% \Delta P} = \frac{27.27}{60} \quad [1]$$

Any valid working is sufficient for [1].

$$= 0.45 \text{ or } -0.45 \quad [1]$$

An answer of 0.45 (or -0.45) without any valid working is sufficient for [1] only.

Correct use of negative sign for ΔP and PED may be present but is not necessary.

N.B. Candidates who use an accurate midpoint formula may be fully rewarded.

$$\frac{6}{25} \times \frac{7}{6}$$

$$= 0.28 \text{ or } -0.28$$

An answer of 0.28 (or -0.28) without any valid working is sufficient for [1] only.

- (g) Using the diagram and your answers to part (f), explain why price rigidities exist in non-collusive oligopolistic markets.

[4]

Level

Marks

0 *The work does not reach a standard described by the descriptors below.*

0

1 *The written response is limited.*

1–2

For an explanation that the firms may be unwilling to increase or reduce price because they will be worse off in either case.

2 *The written response is accurate.*

3–4

For an explanation that if they increase price they may expect rivals not to follow so that demand is elastic and revenue would decrease. On the other hand, if they cut price they may expect rivals to follow so that demand is relatively inelastic and the firm will be again worse off. Therefore it is not in the firm's interest to change price.

MUST BE TO IMPACT ON REVENUE.

OR

An explanation that, for the profit-maximizing oligopolist who predicts that rival(s) will not follow a price increase but will follow a price cut so there is a range of cost conditions (possible positions of the MC curve) which would intersect the MR curve within the resulting discontinuity at the current level of output. It is therefore relatively likely that the oligopolist will choose to leave price/output unchanged.

2. (a) (i) Identify **two** possible reasons for a decrease in consumer expenditure.

[2]

Possible responses include:

- a decrease in consumer confidence / low consumer confidence
- an increase in the rate of interest / high interest rates
- an increase in household indebtedness / high indebtedness
- an increase in direct taxation / high taxation
- a decrease in wealth.

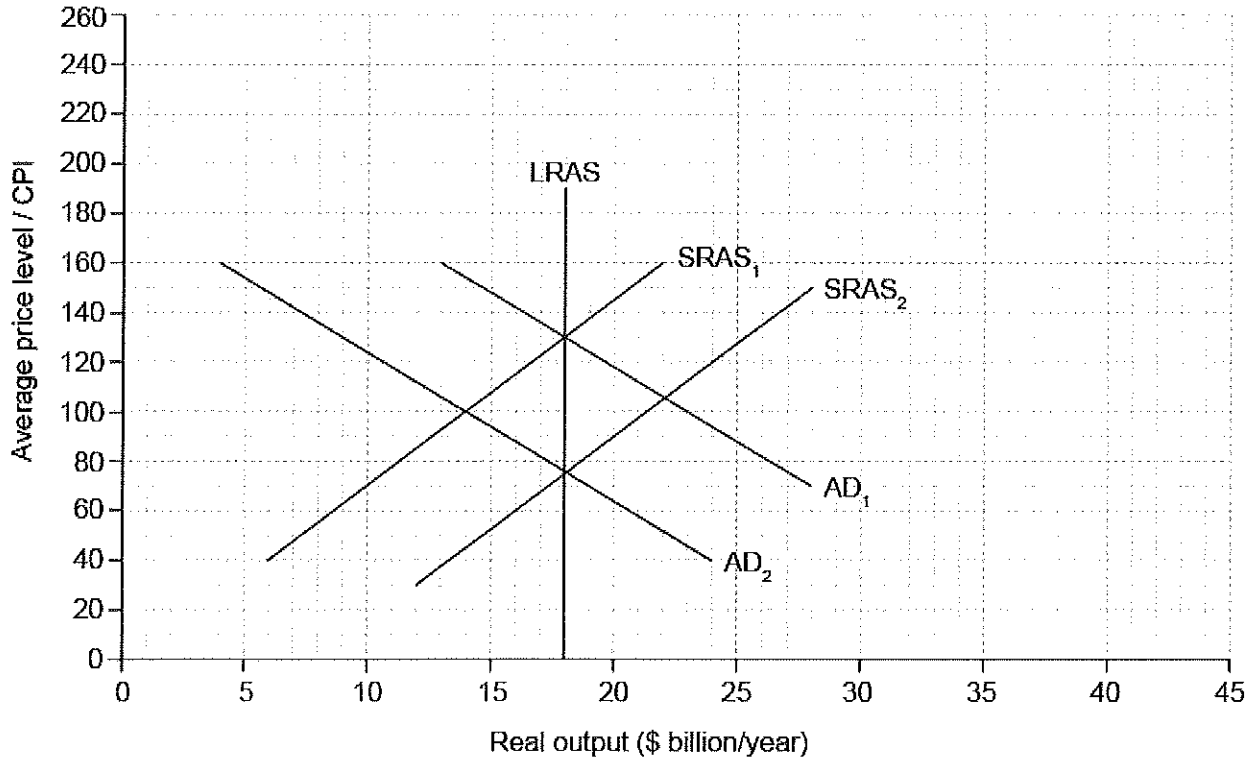
Any other reasonable response should be rewarded.

N.B. A decrease in income or a causal factor such as a decrease in wages can be rewarded as the question does not ask for a reason for a shift in AD.

Award [1] for each appropriate response, up to a maximum of [2].

- (ii) On the diagram, draw and label the new aggregate demand curve following the decrease in consumer expenditure.

[1]



Award [1] for an accurate, labelled AD curve.

- (iii) State the amount (in \$ billion) by which the full employment level of output exceeds the short-run equilibrium level of output.

[1]

\$18 billion – \$14 billion = \$4 billion

An answer of \$4 billion is sufficient for [1].

OFR applies

- (iv) On the diagram, draw and label the long-run aggregate supply curve for Country A.

[1]

For drawing a vertical, labelled LRAS at \$18 billion.

- (v) Identify the average price level and level of real output when Country A has returned to long-run equilibrium as a result of the interaction of market forces.

[1]

Real output = \$18 billion, APL (measured by CPI) = 75

Accept answers between 70 and 80 inclusive.

Both answers must be correct for the award of [1].

OFR applies

- (b) Explain, giving **two** reasons, why the aggregate demand curve has a negative slope. [4]

| Level | Marks |
|--|-------|
| 0 <i>The work does not reach a standard described by the descriptors below.</i> | 0 |
| 1 <i>The written response is limited.</i> For providing one reason with limited explanation. | 1 |
| For providing one accurate reason or two reasons with limited explanation. | 2 |
| 2 <i>The written response is accurate.</i> For providing one accurate reason and one reason with limited explanation. | 3 |
| For providing two accurate reasons. | 4 |

Reasons **may** include:

- if the average price level increases, then real wealth decreases, so people will spend less (**N.B.** *real income is not acceptable*)
- if the average price level increases, interest rates are likely to rise, discouraging investment and consumer spending
- if the average price level increases, the economy's exports become less competitive, reducing demand for exports (or (but not in addition to the "export" argument) imports become relatively cheaper, so imports increase).

- (c) (i) Calculate the income tax paid in 2015 by an individual earning \$65 000 per year. [2]

$$14\,000 \times 10\% + 16\,000 \times 20\% + 27\,000 \times 32\% \\ = 1400 + 3200 + 8640 \quad [1]$$

Any valid working is sufficient for [1].

$$= \$13\,240 \quad [1]$$

- (ii) Calculate the average rate of tax paid by the individual in 2016 (assuming the individual's income remains the same as in 2015). [3]

$$14\,000 \times 8\% + 16\,000 \times 16\% + 27\,000 \times 25\% \\ 1120 + 2560 + 6750 \quad [1]$$

Any valid working is sufficient for [1].

$$= 10430 \quad [1]$$

$$\text{Average rate of tax} = \frac{10\,430}{65\,000} \times 100 = 16.05\% \text{ or } 0.16 \quad [1]$$

OFR applies if the tax paid is calculated incorrectly.

- (iii) Explain why a decrease in the rate of direct tax would affect the value of the multiplier in Country A. [2]

The value of the multiplier is given by the equation $\frac{1}{s+t+m}$ [1]

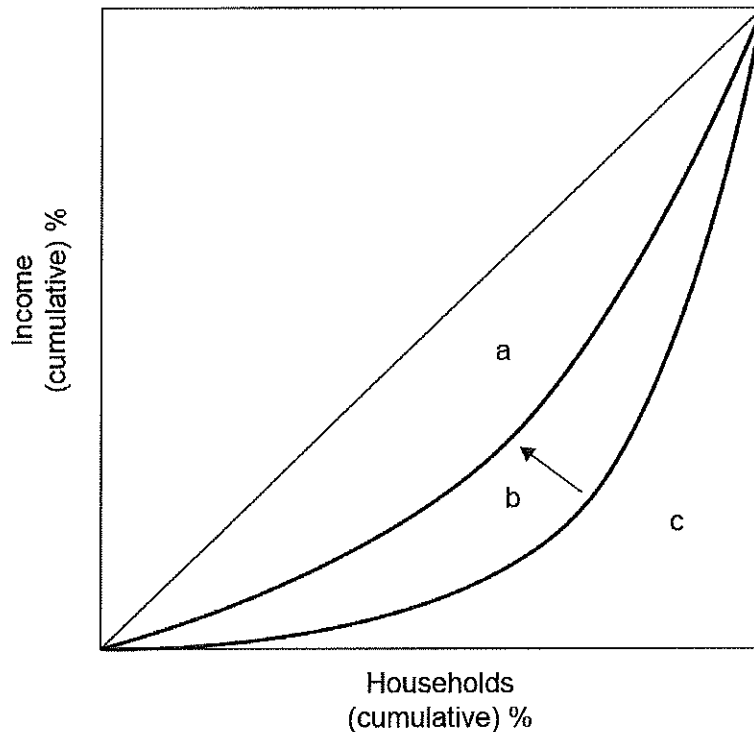
OR the idea that consumption will increase

If the rate of direct tax decreases, then, in the equation, t decreases and so the value of the multiplier increases. [1]

***N.B.** A response which explains that, if the rate of direct taxation falls, then the marginal rate of withdrawal decreases / marginal propensity to consume increases and so the multiplier increases should be fully rewarded.*

- (d) (i) In the following box, sketch and label a Lorenz curve for Country A to show the likely effects on the distribution of income if the rate of indirect tax is reduced.

[2]



| Level | | Marks |
|-------|--|-------|
| 0 | The work does not reach a standard described by the descriptors below. | 0 |
| 1 | There is a correct Lorenz curve diagram. | 1 |
| 2 | There is a correct Lorenz curve diagram showing a movement towards the line of perfect equality. | 2 |

N.B. Full marks cannot be awarded if axes are not labelled appropriately.

Vertical axis may be % income, or cumulative income.

Horizontal axis may be % households/population or cumulative households/population.

If correct labels are on the wrong axes or wealth is used instead of income then a maximum of **[1]** may be awarded.

Incorrect labels (eg P and Q) should result in no marks being awarded.

- (ii) With reference to your diagram in part (d)(i), explain how the Gini coefficient would be derived. [2]

Gini coefficient = $\frac{a+b}{a+b+c}$ or appropriate explanation using the diagram provided.

| Level | Marks |
|--|-------|
| 0 <i>The work does not reach a standard described by the descriptors below.</i> | 0 |
| 1 <i>There is a partially accurate attempt to use the areas in the diagram to derive the Gini coefficient.</i> | 1 |
| 2 <i>There is an accurate demonstration, using the diagram, of how the Gini coefficient is derived.</i> | 2 |


Any response indicating clear understanding (eg area between diagonal and Lorenz curve over half-square area before or after the change) should be fully rewarded.

- (e) Explain how the reductions in the rates of income tax in 2016 specified in part (c) may affect equity in the distribution of income in Country A. [4]

| Level | Marks |
|---|-------|
| 0 <i>The work does not reach a standard described by the descriptors below.</i> | 0 |
| 1 <i>The written response is limited.</i> For an explanation that reducing the rates of income tax according to the data given will make the tax system less progressive, as those on higher incomes will benefit proportionately more. | 1–2 |
| 2 <i>The written response is accurate.</i> For an explanation that reducing the rates of income tax according to the data given will make the tax system less progressive, as those on higher incomes will benefit proportionately more and that reducing the rates of income tax may be seen as inequitable, as the tax burden is reduced relatively more for those who can afford to pay more tax. | 3–4 |

An appropriate alternative view should, if explained clearly, be fully rewarded. Eg less revenue is available to the government to assist those on lower incomes.

Notes for examiners:

1. Whenever relevant, carry over marks must be awarded. If a candidate makes an error in calculation, but then uses the incorrect figure appropriately and accurately in later question parts, then the candidate may be fully rewarded. This is the “own-figure rule” and you should put OFR on the script where you are rewarding this. To do this you will need to use the on-page comment annotation tool ().
2. Alternative approaches may be taken in responses to the [4 mark] questions that use A02 command terms. If this is the case and the alternative approaches are valid, then full credit should be given.
3. A candidate may be penalized for not rounding correctly, failing to give answers correct to 2 dp or, in some cases, for not including the appropriate units. However, a candidate may only be penalized ONCE per question (not per part) for each type of error.

1. (a) (i) Calculate Q_D and Q_S at a price of \$14 per pack. [2]

$$Q_D = 700 - 25(14) = 700 - 350 = 350 \text{ packs} \quad [1]$$

An answer of 350 (or 350 packs) without any valid working is sufficient for [1 mark].

$$Q_S = 100 + 50(14) = 100 + 700 = 800 \text{ packs} \quad [1]$$

An answer of 800 or (800 packs) without any valid working is sufficient for [1 mark].

- (ii) Calculate the price which would result in a demand of 475 packs per week. [2]

$$475 = 700 - 25P \quad [1]$$

$$25P = 225$$

Any valid working is sufficient for [1 mark].

$$P = \$9 \quad [1]$$

An answer of $P = 9$ (or \$9) without any valid working is sufficient for [1 mark] only.

(iii) Calculate the equilibrium price and quantity.

[2]

At equilibrium, $Q_D = Q_S$

$$700 - 25P = 100 + 50P$$

$$600 = 75P$$

$$P = \$8$$

[1]

An answer of $P = 8$ (or \$8) without any valid working is sufficient for [1 mark].

$$Q_D = 700 - 25(8)$$

$$Q_D = 500 \text{ packs}$$

OR

$$Q_S = 100 + 50(8)$$

$$Q_S = 500 \text{ packs}$$

[1]

An answer of 500 (or 500 packs) without any valid working is sufficient for [1 mark].

- (b) On the axes below, draw the demand and supply curves using a price range from \$2 to \$16 per pack. Each curve should be labelled. [4]

For a correctly constructed demand curve. [1]

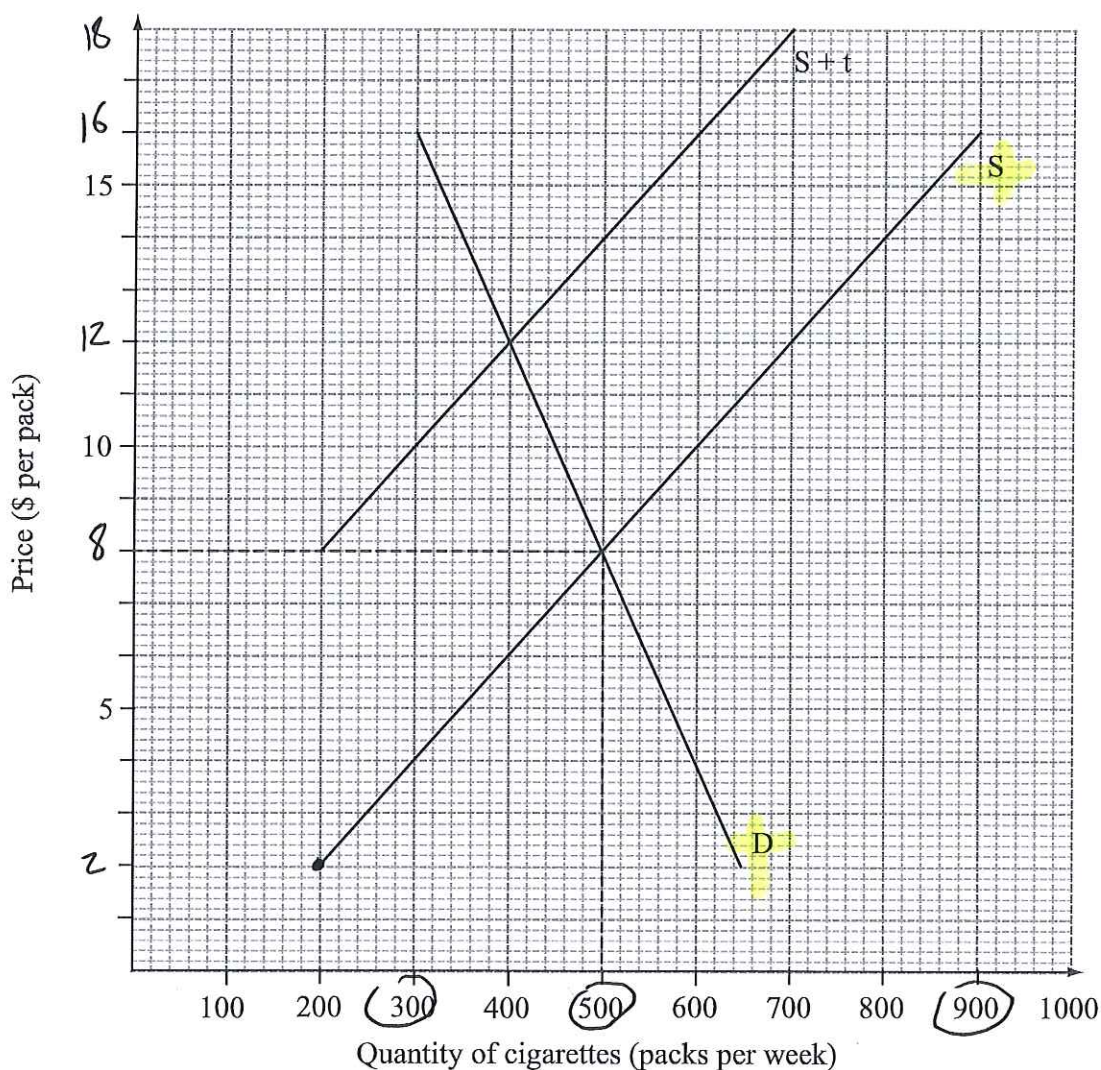
For a correctly labelled demand curve (D). [1]

For a correctly constructed supply curve. [1]

For a correctly labelled supply curve (S). [1]

Candidates who plot curves incorrectly but provide appropriate labels should not be rewarded for labelling the curves. The dotted lines from the equilibrium point to the axes are not required.

Candidates who do not use the specified price range of \$2 to \$16 per pack but who draw accurate curves may be awarded full marks.



- (c) In order to discourage the consumption of cigarettes, the government imposes a specific indirect tax of \$6 per pack.

On the above graph, plot the new supply curve to illustrate the effect of the indirect tax.

[2]

For drawing a new supply curve parallel and above/to the left of the original supply curve.

[1]

OR

For accurately drawing the new curve parallel to the original supply curve and \$6 above the original.

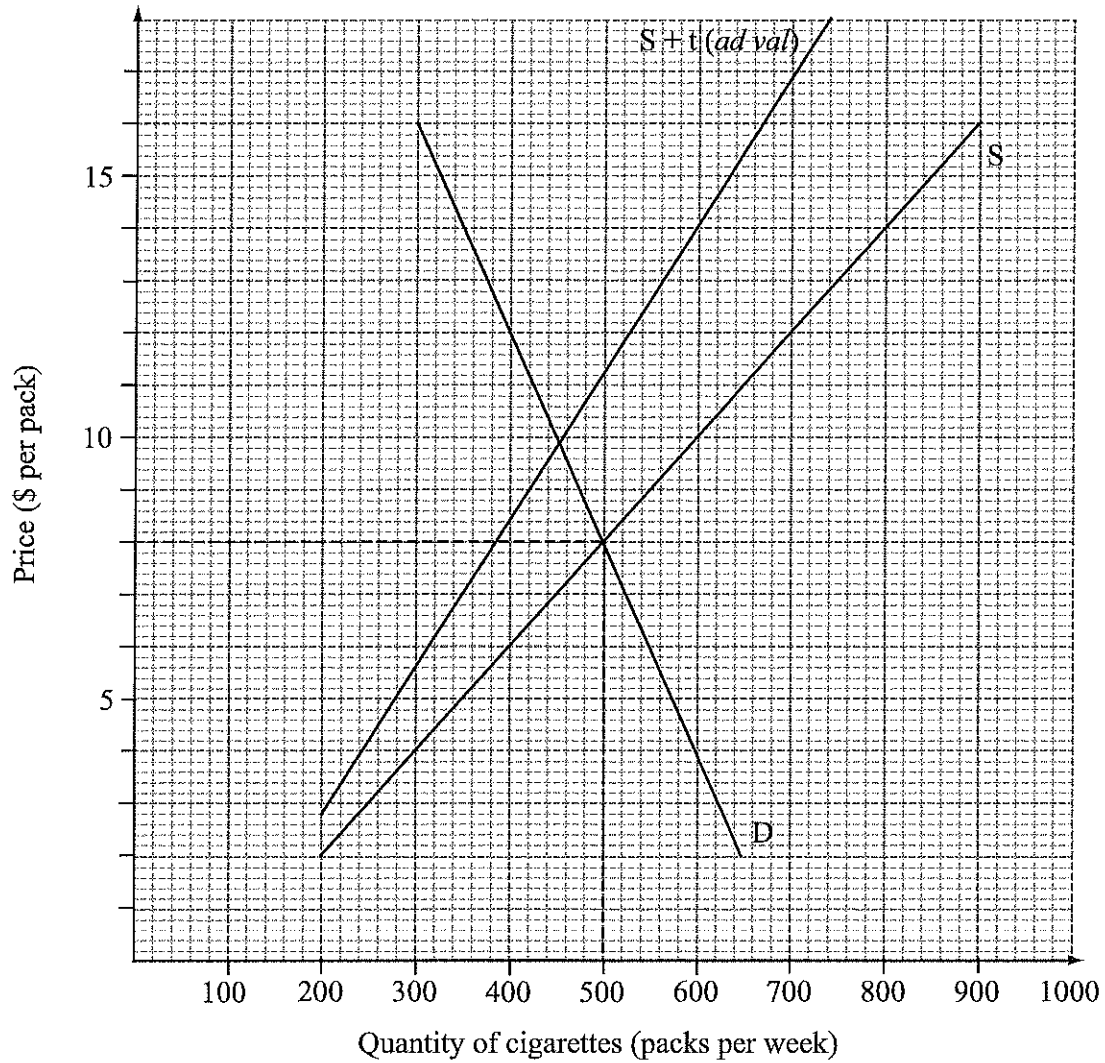
[2]

N.B. Candidates who plot a new supply curve above and parallel to the original, but which is not \$6 above the original, should be awarded [1 mark].

It is not necessary to illustrate the effect of the tax in any other way (eg with arrows from the original price to the new price).

- (d) On the axes below, sketch a diagram and explain how the new supply curve would have been different if the government had imposed an *ad valorem* tax on cigarettes.

[4]



continued ...

Question 1(d) continued

Level

0 The work does not reach a standard described by the descriptors below. 0

1 There is a correct diagram or an accurate response. 1–2

For drawing an accurate, labelled diagram showing two supply curves, one of which is above/to the left of the other, and which diverges as price increases **or** for explaining that an *ad valorem* tax is calculated as a percentage of the price of the product. Therefore, as price increases, the size of the tax also increases. Thus the new supply curve would be above and steeper than the original.

2 There is a correct diagram and an accurate response. 3–4

For drawing an accurate, labelled diagram showing two supply curves, one of which is above/to the left of the other, and which diverges as price increases **and** for explaining that an *ad valorem* tax is calculated as a percentage of the price of the product. Therefore, as price increases, the size of the tax also increases. Thus the new supply curve would be above and steeper than the original.

Candidates who incorrectly label diagrams can be rewarded with a maximum of [3 marks].

It is not required that the original supply curve be plotted accurately – the command term is “sketch”. A demand curve is not necessary.

(e) Calculate the total weekly revenue earned by the government from the specific tax. [2]

$$\text{tax revenue} = 6 \times 400$$

Any valid working is sufficient for [1 mark].

$$= \$2400 \quad [1]$$

An answer of \$2400 or 2400 without any valid working is sufficient for [1 mark] only.

OFR applies

NB Candidates who use their answer to part (d) (*ad valorem* tax) for this part should receive [0 marks]. Candidates who have calculated the new equilibrium by using the new supply equation (rather than reading it from the graph) should be fully rewarded. If they do so, and the new equilibrium is calculated incorrectly but the result is used appropriately then [1 mark] may be awarded.

- (f) Calculate the change in weekly consumer spending on cigarettes in Burbia as a result of the tax. [3]

Initial spending = $8 \times 500 = 4000$ [1]

An answer of \$4000 or 4000 without any valid working is sufficient for [1 mark] only.

New spending = $12 \times 400 = 4800$ [1]

An answer of \$4800 or 4800 without any valid working is sufficient for [1 mark] only.

Change in spending = $4800 - 4000 = \$800$

An answer of \$800 or 800 with no valid workings is sufficient for [1 mark] only.

OFR applies

- (g) Explain why the value of price elasticity of demand is important for a government which is attempting to use taxation to discourage the consumption of a product. [4]

Level

0 The work does not reach a standard described by the descriptors below. 0

1 The written response is limited. 1–2

For explaining that the value of price elasticity of demand will influence the number of consumers who will be discouraged from consuming the product.

2 The written response is accurate. 3–4

For explaining that if demand is price inelastic the resulting decrease in quantity demanded will be proportionately smaller than the increase in price. Therefore the government's attempt to discourage the consumption of a product will be less effective.

N.B. Candidates who explain the issue using an example where demand is price elastic (explaining that in this case the policy will be more effective) should be fully rewarded.

For full marks, candidates must refer to the proportional or relative changes in quantity demand.